Mountain lee waves in Czechia

Abstract

This thesis has predominantly a search character. It summarizes the most important theoretical and practical findings about mountain lee waves, available in both Czech and foreign resources. It also discusses another phenomena and types of air flow related to the air layer's flow over a barrier. In a special chapter there is an introduction into the use of mountain lee waves for gliding. Another part of the thesis analyzes in detail Czech areas, where the lee waves can occur, and there are also mentioned the conditions of their occurence in those areas. Jeseníky mountains by southwest winds are the most sought after area, because it's possible to achieve a long distance and significant elevation difference when gliding there, in addition to ability of flying in levels normally restricted. The last part of the thesis discusses the possibilities of lee waves forecasting, with a demonstration on a specific model, linked by a data record of a flight. Currently, the main wave-forecasting instrument is the numerical model WRF, which predicted rising areas in the considerated case correctly, regardless the horizontal resolution 1 or 2 km.

Keywords: lee waves, orographic clouds, lee, atmospheric turbulence, rotor, gliding.